

What is claimed is:

1. A continuous processing apparatus by plasma polymerization having a plurality of chambers to perform a surface processing by plasma polymerization on the surface of a substance being moved into a chamber, comprises:

at least one vertical chamber in which a substance is vertically moved and at least one electrode is included therein.

2. The apparatus of claim 1, wherein the electrode is disposed in parallel to the movement direction of a substance in the chamber.

3. The apparatus of claim 2, wherein the chamber includes a plurality of electrodes, each being disposed in a line in parallel to the movement direction of a substance in the chamber.

4. The apparatus of claim 1, wherein the vertical chamber is a polymerization chamber in which the surface of a substance is processed by plasma polymerization.

5. The apparatus of claim 1, wherein the vertical chamber includes a substance pass hole formed at the upper and the lower sides.

6. The apparatus of claim 1, wherein the vertical chamber includes a substance pass hole at the top and the bottom thereof.

7. The apparatus of claim 1, wherein as power is applied to the

substance, the substance itself is used as an electrode.

8. The apparatus of claim 1, wherein the vertical chamber comprises:

5 a chamber body in which a substance is moved vertically, one side thereof being opened,

a chamber door combined to the opened side of the chamber body; and

at least one electrode disposed in parallel to the movement direction of the substance.

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9. The apparatus of claim 8, wherein the electrode is disposed in the chamber body.

10. The apparatus of claim 8, wherein the electrode is disposed at
15 the chamber door.

11. The apparatus of claim 1, wherein the vertical chamber includes a partition plate at the center thereof, so that the vertical chamber is divided into two vertical areas by the partition plate.

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12. The apparatus of claim 11, wherein the movement direction of a substance is the opposite to each other in the two vertical areas.

13. The apparatus of claim 11, wherein the two vertical areas
25 includes at least one electrode disposed in parallel to the movement direction of the substance, respectively.

14. A continuous processing apparatus by plasma polymerization with a vertical chamber in which a plurality of chambers are provided to perform a surface processing by plasma polymerization on the surface of a substance
5 being moved into a chamber, comprises:

a first vertical chamber in which a substance is moved vertically, having at least one electrode; and

a second vertical chamber in which a substance is moved vertically, having at least one electrode and being disposed spaced apart with a certain
10 interval from the first vertical chamber.

15. The apparatus of claim 14, wherein at least one of the first and the second vertical chambers is a polymerization chamber in which a substance is surface-processed by plasma polymerization.

16. The apparatus of claim 15, wherein at least one horizontal chamber in which the substance is moved horizontally is included.

17. The apparatus of claim 16, wherein if the second vertical
20 chamber is a polymerization chamber, one of the remaining chambers is a pre-processing chamber in which the surface of the substance is cleaned before being polymerized.

18. The apparatus of claim 16, wherein if the first vertical chamber is a polymerization chamber, one of the remaining chambers is a post-
25 processing chamber in which air is injected thereinto and post-processing is performed by plasma discharging.

19. The apparatus of claim 16, wherein the horizontal chamber comprises:

a chamber body having a pass hole formed at the left and the right sides thereof so that the substance can pass therethrough;

an upper door having an electrode at the inner side thereof and being opened and closed upwardly; and

a lower door having an electrode at the inner side thereof and being opened and closed downwardly.

20. The apparatus of claim 15, wherein the first and the second vertical chambers are polymerization chamber having the same conditions at least one out of a kind of a gas supplied to the chamber, a supply rate of gases, a range of voltage applied to the electrode and the pressure inside the chamber.

21. A continuous processing apparatus by plasma polymerization with a vertical chamber including an unwinding chamber having an unwinding roll for unwinding a substance wound thereon, a winding chamber having a winding roll for winding a surface-processed substance, and a polymerization chamber in which the substance is surface-processed by plasma discharging after being conveyed from the unwinding chamber,

wherein the substance is vertically moved in the polymerization chamber and at least one electrode is included in the polymerization chamber.

22. The apparatus of claim 21, wherein the polymerization chamber comprises a chamber body having an electrode formed at the inner side thereof,

and a door having an electrode formed at the inner side thereof and opening and closing the chamber body.

23. The apparatus of claim 21, wherein one of the chambers
5 comprises:

at least one roller contacted by a substance being moved; and
a power supply unit for rendering the substance itself to become an
electrode by contacting the roller as power is supplied to the roller.

10 24. A continuous processing apparatus by plasma polymerization
with a vertical chamber, comprises:

an unwinding chamber having an unwinding roll for unwinding a wound
substance;

a winding chamber having an winding roll for winding a surface-
15 processed substance;

a first polymerization chamber for surface-processing the substance
conveyed from the unwinding chamber by plasma discharging, and having
substance pass hole formed at an upper and a lower sides and at least one
electrode therein;

20 a second polymerization chamber for surface-processing the substance
conveyed from the unwinding chamber by plasma discharging, and having
substance pass hole formed at an upper and a lower sides and at least one
electrode therein;

wherein the movement direction of the substance is opposite in the first
25 and the second polymerization chamber

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